

**Baldock Radio Station
Royston Road
Baldock
Herts SG7**



**Mobile Phone
Base-Station Audit**

**Audit Site: Area around 79 Alcester Road
Kings Heath
Birmingham
B14 7JG**

| Work Performed by | | Distribution List | |
|---------------------------------|--------------------------------|-------------------|---|
| James Loughlin Field Manager | 3G measurements & Report | Lloyd Tailby | 1 |
| Mike Reynolds Field Officer | 3G measurements | Ajmal Hussain | 2 |
| John Taylor T.I. Officer | 2G measurements & 2G Report | John Taylor | 1 |
| | | Technical Manager | 1 |
| | | Case/Year file | 2 |

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Report Summary

As the radio spectrum is continually changing, these measurements can only provide information on the radio frequency (RF) conditions for the specific locations at the time of the survey.

The Office of Communications (Ofcom) performed this survey of the RF emission environment in the vicinity of 79 Alcester Road, Kings Heath, Birmingham on the 5th October 2005. Both second generation (2G) and third generation (3G) base station emissions were measured separately and the signal levels combined to give the Total Band Exposure as detailed below.

The table, sorted in descending order of signal level, summarises the total results obtained at each measurement location.

Summary of results:

| Location | 3G Exposure Quotient | 2G Exposure Quotient | TOTAL 3G + 2G Exp. Quot. | Related to ICNIRP limit |
|--------------------------------------|----------------------------|----------------------------|--------------------------------|----------------------------|
| Junction Redwood Croft & Alcester Rd | 3.75E-05 | 2.58E-04 | 2.95E-04 | 1/3384 |
| Footpath op. Shell Garage | 1.42E-05 | 9.88E-05 | 1.13E-04 | 1/8846 |
| Side of Carphone Warehouse | 7.31E-06 | 2.72E-05 | 3.45E-05 | 1/28981 |

2G data is an annex to this report

The Peterborough office carried out the 2G audit, while mobile team 2 from Baldock completed a concurrent 3G survey. The results from both have been combined to provide the summary of results on page 3.

Initially the base station was scanned to ascertain the extent of 3G activity. Only one carrier associated with this base station site was detected.

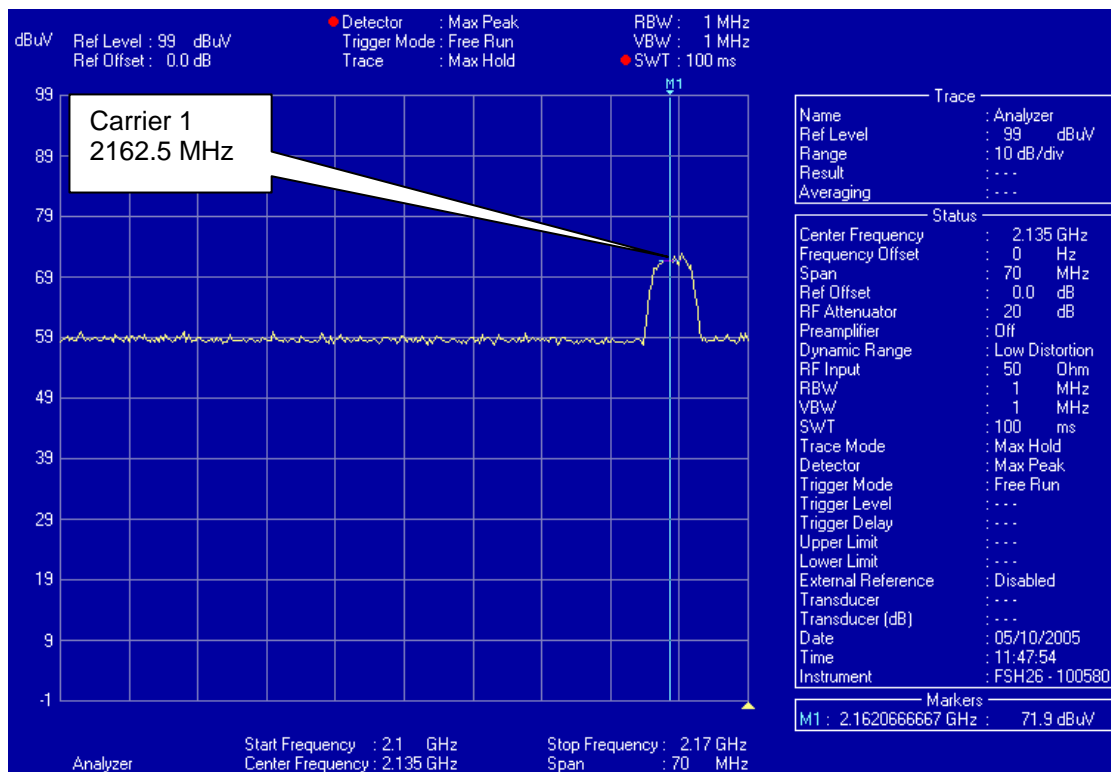


Figure 1

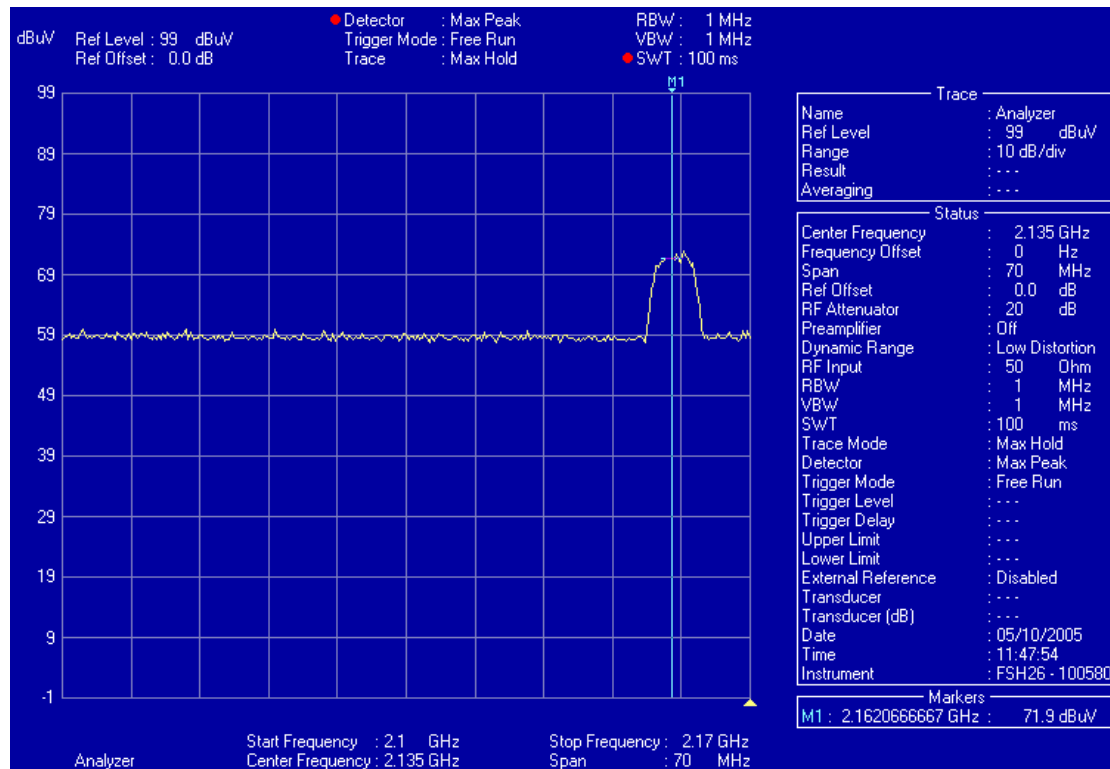
Figure 1 shows the one Carrier that was active at this site. At each location the measuring antenna was set up on a tripod 1.5m above ground level. In this position and the carrier's field strength was recorded.

For each measurement location the 3G exposure quotient was then calculated. This in turn was added to the 2G exposure quotient before calculating the Total Exposure Quotient for each survey site.

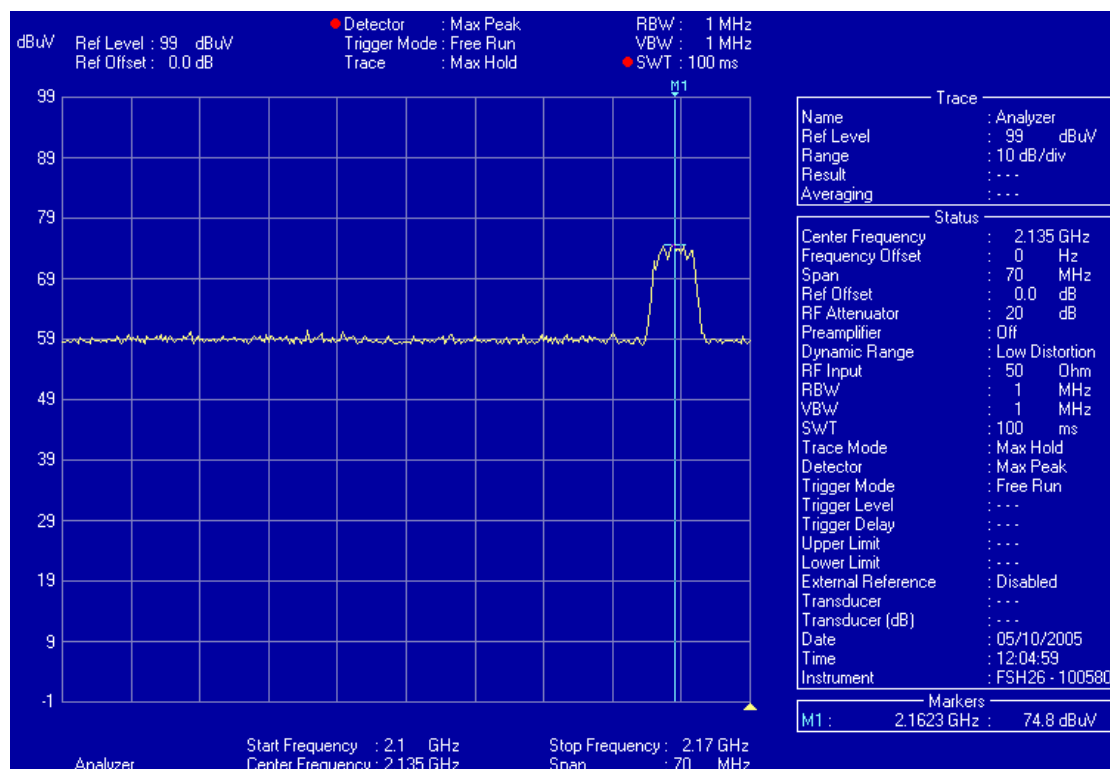
All the 3G measurement data is given on page 5, while the 2G data is contained in the annex to this report.

| | | | | | |
|------------|---|----------------|-------------|-------------|--------|
| Equipment: | Rohde & Schwarz FSH6 Spectrum Analyser | serial number: | 100580 | CEMS number | 200103 |
| | EMCO DRG 3115 horn Antenna | | 2153 | | 200005 |
| | Garmin GPS75 receiver | | 37524369 | | 200011 |
| | Reynolds 3 metre cable type 219-0088 0201 | | ML2/002-196 | | |

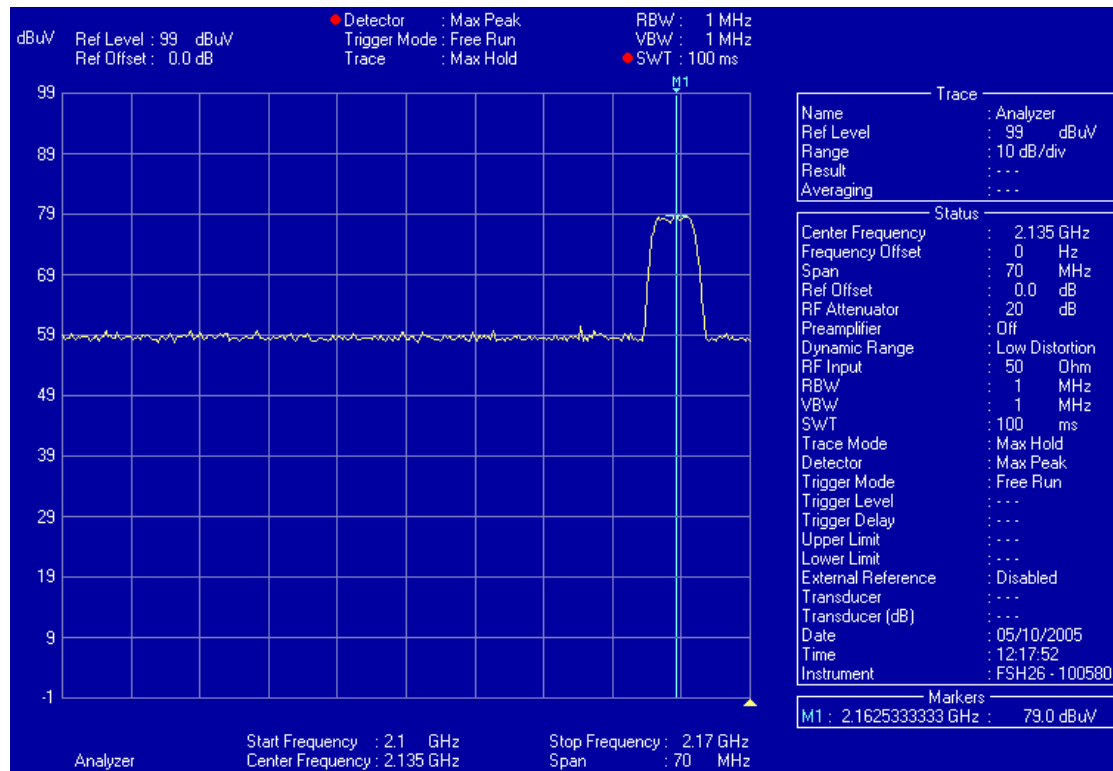
| Location | Frequency | Fieldstrength | Fieldstrength | Fieldstrength | Power | Power | ICNIRP | 3G | 3G |
|--------------------------------------|-----------|---------------|---------------|---------------|------------------|------------------|------------------|-------------------|-------------------|
| | MHz | dBuV/m | uV/m | V/m | W/m ² | W/m ² | W/m ² | Exposure Quotient | Exposure Quotient |
| Side of Carphone Warehouse | 2162 | 104.4 | 165,958.7 | 0.165959 | 0.0000730567 | 7.306E-05 | 10 | 0.00007305670 | 7.31E-06 |
| Footpath op. Shell Garage | 2162.3 | 107.3 | 231,739.5 | 0.231740 | 0.0001424494 | 0.0001424 | 10 | 0.000014244940 | 1.42E-05 |
| Junction Redwood Croft & Alcester Rd | 2162.5 | 111.5 | 375,837.4 | 0.375837 | 0.0003746776 | 0.0003747 | 10 | 0.000037467760 | 3.75E-05 |



Location 1: Road by side of Carphone Warehouse

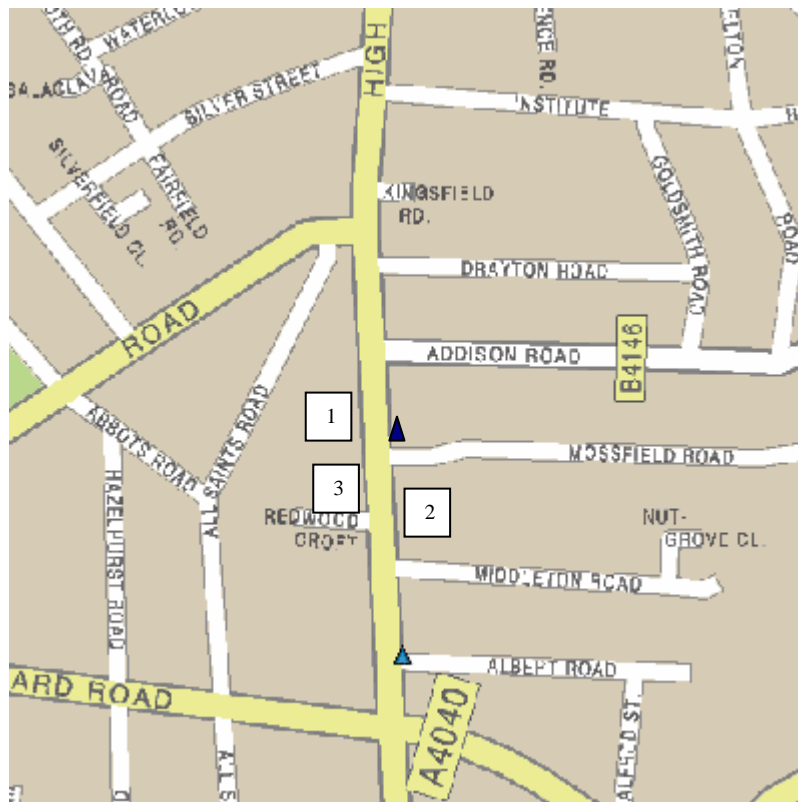


Location 2: Footpath opposite Shell filling station



Location 3: Junction of Redwood Croft and Alcester Road

Measurement Locations



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Annex

2G Mobile Phone Base-Station Audit

Mobile Phone Base-Station Audit

**Audit site: Area around 79 Alcester Road
Birmingham
B14 7JG**

In 2000 the Government asked the Radiocommunications Agency to implement a national measurement programme to ensure that emissions from cellular base stations do not exceed the guidelines for public maximum exposure set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Ofcom took over the functions of the Radiocommunications Agency, along with those of the Independent Television Commission, Radio Authority, Oftel and Broadcasting Standards Commission, on 29 December 2003.

Electric field strength measurements made in various bands are referenced to and presented alongside the relevant ICNIRP public maximum exposure levels. On the left hand side of the results page(s) is a graphical representation of the radio spectrum surveyed at each location on the site. The green line on each graph indicates the ICNIRP guideline exposure level for that frequency band. To the right hand side of each graph is a table showing the ten highest level emissions recorded within a band.

Further explanation of the results and their context within the ICNIRP guidelines can be provided by the Ofcom officers at the time of the audit or by contacting Ofcom on 0845 456 3000, or by email at contact@Ofcom.org.uk. Results taken from all audit sites and further information on the audit programme can be found on the Ofcom website at www.ofcom.org.uk.

Report Summary

As the radio spectrum is continually changing, these measurements can only provide information on the radio frequency (RF) conditions for the specific locations at the time of the survey.

Ofcom performed this survey of the RF emission environment prevailing in the vicinity of Area around 79 Alcester Road on 5 October 2005.

The following table, sorted in descending order of signal level, summarises the results obtained at each measurement location.

| Summary of results: | | |
|---|---------------------|------------------------------|
| Location | Total Band Exposure | Relationship to ICNIRP Limit |
| Junction of Redwood Croft and Alcester Road | 2.58E-04 | 1/3874 |
| Footpath opposite Shell filling station | 9.88E-05 | 1/10122 |
| Road by side of Car Phone Warehouse | 2.72E-05 | 1/36821 |

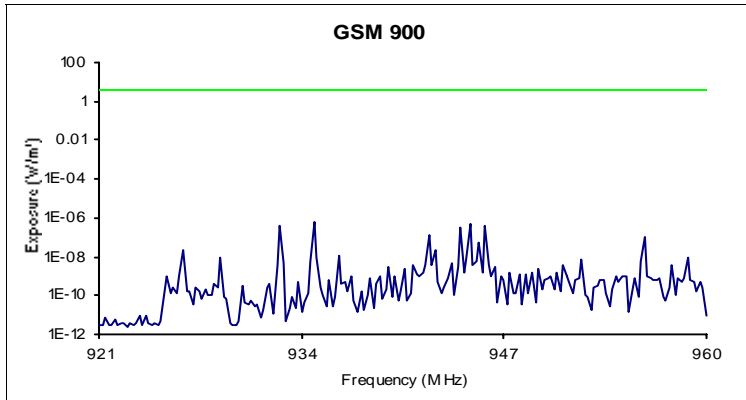
Issued on behalf of Ofcom.

Issued by:

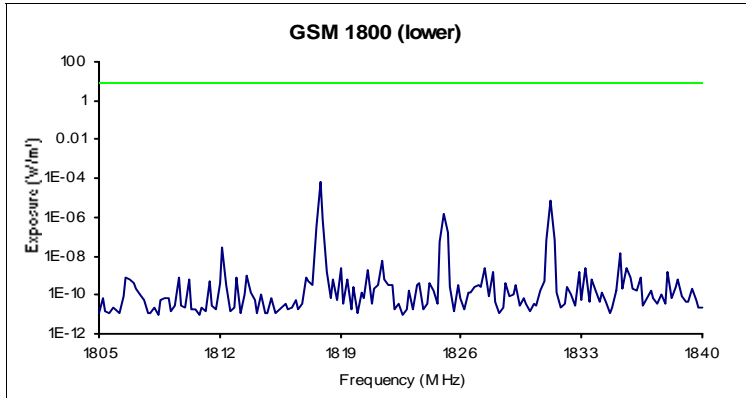
Received by:

John Taylor
Technical Investigation Officer

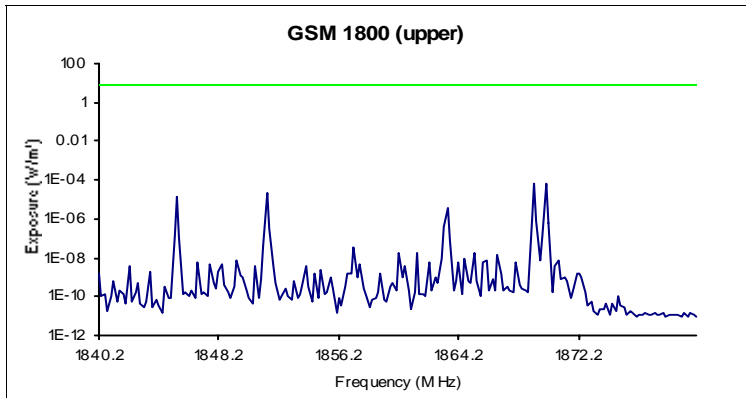
| | |
|--|-------------------------------|
| Site: Area around 79 Alcester Road | Receiver: |
| Location: Road by side of Car Phone Warehouse | Manufacturer: ROHDE&SCHWARZ |
| NGR: SP 0733 8137 Taken from GPS | Model: EB200 |
| Start Time: 05 October 2005 11:35:39 | Serial Number: 837.752/003 |
| Officer: John Taylor | Antenna: |
| | Manufacturer: Rohde & Schwarz |
| | Model: HE200 |
| | Serial Number: 728264/025 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 934.800 | 5.87E-07 | 4.67 | 1.26E-07 |
| 944.800 | 4.66E-07 | 4.72 | 9.87E-08 |
| 932.600 | 4.23E-07 | 4.66 | 9.08E-08 |
| 945.800 | 3.63E-07 | 4.73 | 7.67E-08 |
| 944.200 | 3.37E-07 | 4.72 | 7.15E-08 |
| 942.200 | 1.28E-07 | 4.71 | 2.71E-08 |
| 956.000 | 1.15E-07 | 4.78 | 2.40E-08 |
| 945.400 | 5.00E-08 | 4.73 | 1.06E-08 |
| 926.400 | 2.35E-08 | 4.63 | 5.07E-09 |
| 942.600 | 2.33E-08 | 4.71 | 4.94E-09 |
| Band Exposure Quotient: | | | 5.74E-07 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,817.800 | 6.57E-05 | 9.09 | 7.22E-06 |
| 1,831.200 | 7.20E-06 | 9.16 | 7.86E-07 |
| 1,825.000 | 1.56E-06 | 9.13 | 1.71E-07 |
| 1,818.000 | 7.20E-07 | 9.09 | 7.92E-08 |
| 1,817.600 | 3.22E-07 | 9.09 | 3.54E-08 |
| 1,825.200 | 1.63E-07 | 9.13 | 1.79E-08 |
| 1,831.000 | 6.87E-08 | 9.15 | 7.51E-09 |
| 1,831.400 | 6.57E-08 | 9.16 | 7.17E-09 |
| 1,824.800 | 5.92E-08 | 9.12 | 6.49E-09 |
| 1,812.200 | 2.47E-08 | 9.06 | 2.73E-09 |
| Band Exposure Quotient: | | | 8.35E-06 |

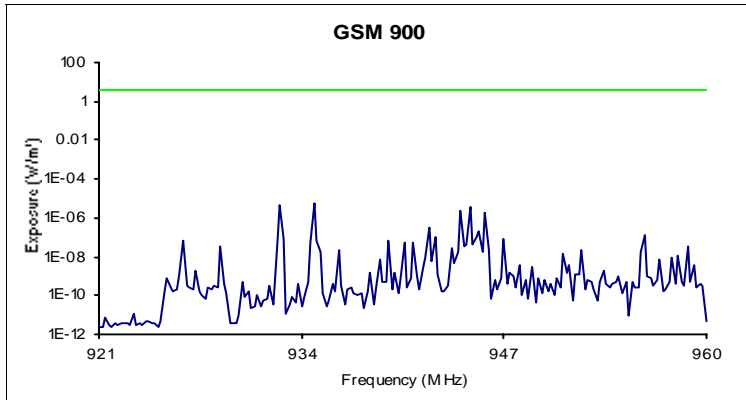


| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,869.200 | 6.54E-05 | 9.35 | 7.00E-06 |
| 1,870.000 | 6.12E-05 | 9.35 | 6.54E-06 |
| 1,851.400 | 2.30E-05 | 9.26 | 2.49E-06 |
| 1,845.400 | 1.31E-05 | 9.23 | 1.42E-06 |
| 1,863.400 | 3.56E-06 | 9.32 | 3.82E-07 |
| 1,869.000 | 9.03E-07 | 9.35 | 9.66E-08 |
| 1,869.400 | 7.87E-07 | 9.35 | 8.42E-08 |
| 1,870.200 | 5.98E-07 | 9.35 | 6.39E-08 |
| 1,863.200 | 4.09E-07 | 9.32 | 4.39E-08 |
| 1,851.600 | 2.90E-07 | 9.26 | 3.13E-08 |
| Band Exposure Quotient: | | | 1.82E-05 |

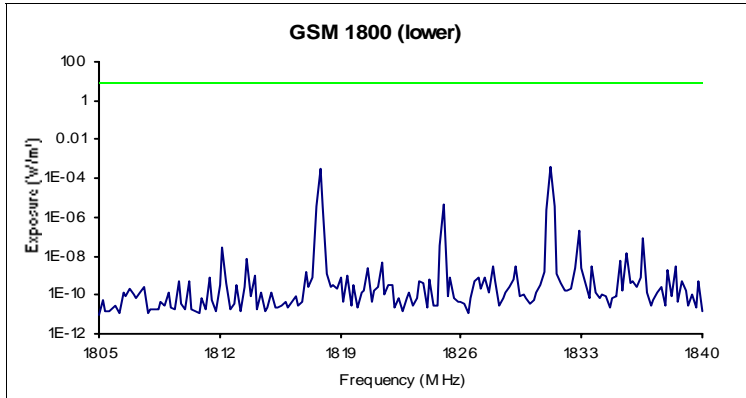
Total number of measurements: 572

Total Band Exposure Quotient: 2.72E-05

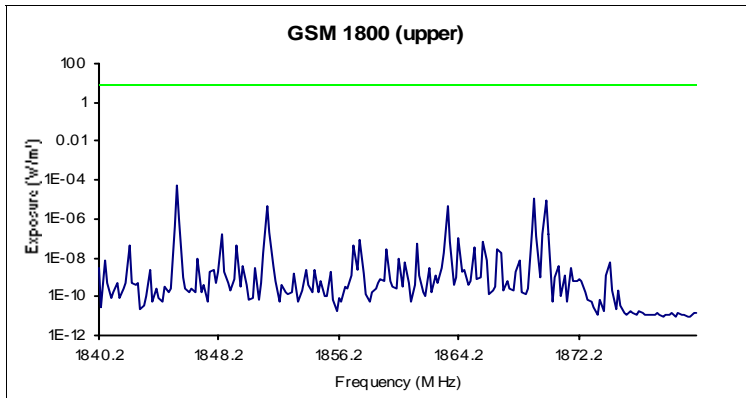
| | |
|--|-------------------------------|
| Site: Area around 79 Alcester Road | Receiver: |
| Location: Footpath opposite Shell filling station | Manufacturer: ROHDE&SCHWARZ |
| NGR: SP 0738 8136 Taken from GPS | Model: EB200 |
| Start Time: 05 October 2005 11:54:46 | Serial Number: 837.752/003 |
| Officer: John Taylor | Antenna: |
| | Manufacturer: Rohde & Schwarz |
| | Model: HE200 |
| | Serial Number: 728264/025 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 934.800 | 5.74E-06 | 4.67 | 1.23E-06 |
| 932.600 | 4.86E-06 | 4.66 | 1.04E-06 |
| 944.800 | 3.71E-06 | 4.72 | 7.84E-07 |
| 944.200 | 2.33E-06 | 4.72 | 4.94E-07 |
| 945.800 | 1.95E-06 | 4.73 | 4.12E-07 |
| 942.200 | 3.52E-07 | 4.71 | 7.47E-08 |
| 945.400 | 2.09E-07 | 4.73 | 4.41E-08 |
| 956.000 | 1.35E-07 | 4.78 | 2.82E-08 |
| 942.600 | 1.09E-07 | 4.71 | 2.31E-08 |
| 945.200 | 1.05E-07 | 4.73 | 2.21E-08 |
| Band Exposure Quotient: | | | 4.38E-06 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,831.200 | 4.14E-04 | 9.16 | 4.53E-05 |
| 1,817.800 | 3.45E-04 | 9.09 | 3.79E-05 |
| 1,825.000 | 4.71E-06 | 9.13 | 5.16E-07 |
| 1,831.400 | 4.05E-06 | 9.16 | 4.42E-07 |
| 1,817.600 | 3.53E-06 | 9.09 | 3.88E-07 |
| 1,818.000 | 3.37E-06 | 9.09 | 3.71E-07 |
| 1,831.000 | 2.44E-06 | 9.15 | 2.66E-07 |
| 1,832.800 | 2.08E-07 | 9.16 | 2.27E-08 |
| 1,836.600 | 8.94E-08 | 9.18 | 9.74E-09 |
| 1,824.800 | 3.65E-08 | 9.12 | 4.00E-09 |
| Band Exposure Quotient: | | | 8.52E-05 |

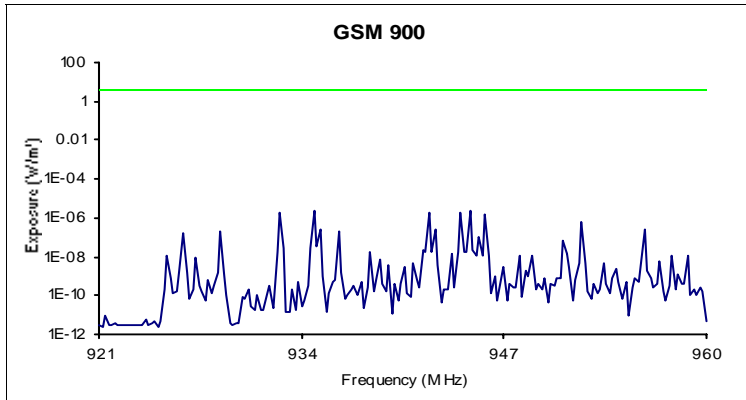


| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,845.400 | 5.22E-05 | 9.23 | 5.66E-06 |
| 1,869.200 | 1.25E-05 | 9.35 | 1.33E-06 |
| 1,870.000 | 8.25E-06 | 9.35 | 8.82E-07 |
| 1,851.400 | 4.93E-06 | 9.26 | 5.32E-07 |
| 1,863.400 | 4.18E-06 | 9.32 | 4.49E-07 |
| 1,845.600 | 8.88E-07 | 9.23 | 9.62E-08 |
| 1,845.200 | 3.78E-07 | 9.23 | 4.10E-08 |
| 1,869.000 | 2.38E-07 | 9.35 | 2.54E-08 |
| 1,851.600 | 1.92E-07 | 9.26 | 2.07E-08 |
| 1,848.400 | 1.74E-07 | 9.24 | 1.88E-08 |
| Band Exposure Quotient: | | | 9.20E-06 |

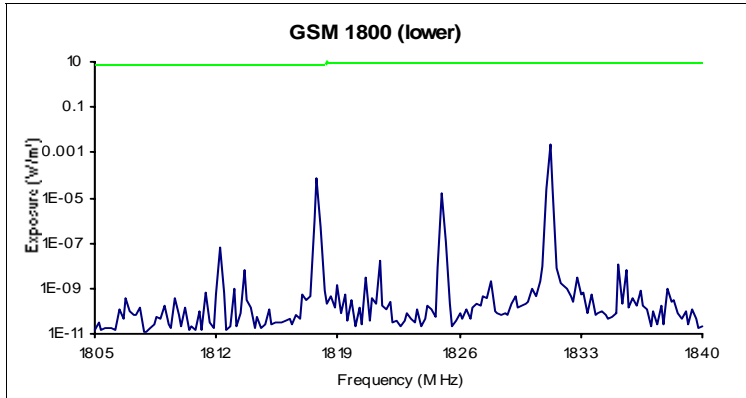
Total number of measurements: 572

Total Band Exposure Quotient: 9.88E-05

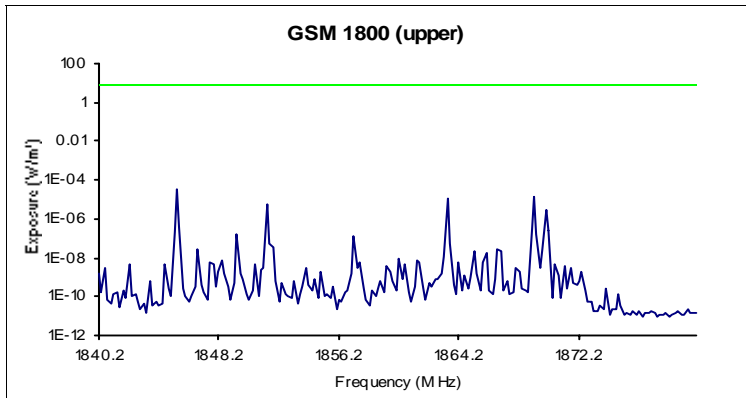
| | |
|--|-------------------------------|
| Site: Area around 79 Alcester Road | Receiver: |
| Location: Junction of Redwood Croft and Alcester Road | Manufacturer: ROHDE&SCHWARZ |
| | Model: EB200 |
| | Serial Number: 837.752/003 |
| NGR: SP 0736 8134 Taken from GPS | Antenna: |
| Start Time: 05 October 2005 12:13:14 | Manufacturer: Rohde & Schwarz |
| | Model: HE200 |
| Officer: John Taylor | Serial Number: 728264/025 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 934.800 | 2.50E-06 | 4.67 | 5.36E-07 |
| 944.800 | 2.23E-06 | 4.72 | 4.73E-07 |
| 932.600 | 1.81E-06 | 4.66 | 3.87E-07 |
| 942.200 | 1.76E-06 | 4.71 | 3.74E-07 |
| 944.200 | 1.73E-06 | 4.72 | 3.67E-07 |
| 945.800 | 1.48E-06 | 4.73 | 3.13E-07 |
| 952.000 | 5.83E-07 | 4.76 | 1.23E-07 |
| 956.000 | 2.69E-07 | 4.78 | 5.63E-08 |
| 942.600 | 2.49E-07 | 4.71 | 5.29E-08 |
| 935.200 | 2.34E-07 | 4.68 | 5.00E-08 |
| Band Exposure Quotient: | | | 2.99E-06 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,831.200 | 2.13E-03 | 9.16 | 2.32E-04 |
| 1,817.800 | 7.20E-05 | 9.09 | 7.92E-06 |
| 1,831.400 | 2.39E-05 | 9.16 | 2.60E-06 |
| 1,831.000 | 2.22E-05 | 9.15 | 2.43E-06 |
| 1,825.000 | 1.71E-05 | 9.13 | 1.87E-06 |
| 1,817.600 | 9.71E-07 | 9.09 | 1.07E-07 |
| 1,818.000 | 5.46E-07 | 9.09 | 6.01E-08 |
| 1,825.200 | 1.24E-07 | 9.13 | 1.36E-08 |
| 1,812.200 | 6.07E-08 | 9.06 | 6.70E-09 |
| 1,821.400 | 1.70E-08 | 9.11 | 1.86E-09 |
| Band Exposure Quotient: | | | 2.47E-04 |



| Frequency (MHz) | Maximum Exposure (W/m²) | ICNIRP Limit (W/m²) | Frequency Exposure Quotient |
|--------------------------------|-------------------------|---------------------|-----------------------------|
| 1,845.400 | 3.70E-05 | 9.23 | 4.01E-06 |
| 1,869.200 | 1.40E-05 | 9.35 | 1.50E-06 |
| 1,863.400 | 1.15E-05 | 9.32 | 1.24E-06 |
| 1,851.400 | 6.06E-06 | 9.26 | 6.55E-07 |
| 1,870.000 | 3.21E-06 | 9.35 | 3.43E-07 |
| 1,845.600 | 4.45E-07 | 9.23 | 4.82E-08 |
| 1,869.000 | 2.92E-07 | 9.35 | 3.13E-08 |
| 1,870.200 | 2.61E-07 | 9.35 | 2.79E-08 |
| 1,845.200 | 2.18E-07 | 9.23 | 2.36E-08 |
| 1,869.400 | 1.76E-07 | 9.35 | 1.89E-08 |
| Band Exposure Quotient: | | | 7.97E-06 |

Total number of measurements: 572

Total Band Exposure Quotient: 2.58E-04

Glossary

- Site:** The building or area around which sets of measurements are taken
- Location:** The position within a site at which a single set of measurements is taken. A set of measurements consists of multiple scans of many frequencies within a number of bands
- Band:** A portion of the electromagnetic spectrum reserved for specific radio services
- NGR:** The Ordnance Survey national grid reference coordinates of the location. In this survey NGRs are specified to 8-digit (10-metre) resolution. E.g. SJ 9755 9888
- GPS:** The Global Positioning System
- Start Time:** The date and time at which the receiver started taking its measurements at a location
- Officer:** The name of the RA representative who carried out the audit
- Receiver:** The receiver used to perform the measurements
- Antenna:** The antenna used to perform the measurements
- Exposure:** The maximum measured electric field strength (dB(μ V/m)) converted to an equivalent power density (W/m²)
- Power Density:** The electromagnetic energy flowing through a unit area normal to the direction of propagation in a unit time. Measured in Watts per square metre (W/m²)
- ICNIRP Limit:** The reference level given by the International Commission for Non-Ionizing Radiation Protection (ICNIRP) for general public exposure to electromagnetic fields

| <i>Frequency</i> | <i>ICNIRP limit</i> |
|------------------|--------------------------|
| 10MHz to 400 MHz | 2 W/m ² |
| 400MHz to 2GHz | f / 200 W/m ² |
| 2GHz to 300GHz | 10 W/m ² |

(where f is frequency in MHz)

Frequency Exposure Quotient:

The ratio of the measured maximum power density to the ICNIRP limit at a given frequency. A value close to 1 signifies that exposure levels could be near to the ICNIRP limit for that frequency

Band Exposure Quotient:

The sum of the frequency exposure quotients for a single band at a location

Total Band Exposure Quotient:

The sum of the frequency exposure quotients for all of the measured bands at a location

- GSM:** Global System for Mobile communication
- ETACS:** Extended Total Access Communications
- TETRA:** Terrestrial Trunked Radio
- 3G:** Third Generation mobile-phone services

- 1.00E-03:** Exponential (or 'scientific') number format. Equal to one thousandth
- 1.00E-06:** Equal to one millionth
- 1.00E-09:** Equal to one thousand-millionth
- 1.00E-12:** Equal to one million-millionth